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CENTRAL INTELLIGENCE AGENCY

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General Information

1. MEZ Development (Vyvoj) was set up in early 1946 within the framework of MEZ General Management, National Enterprise. It was established as a central plant for research and development to serve the various MEZ plants for mass production. The existence of such a plant was fully justified even after MEZ General Management was broken up, in 1949, into individual, independent enterprises. Actually, the MEZ group was supposed to be the main producer of medium and small machinery in Czechoslovakia in the field of strong-current electricity; but the various enterprises did not have enough qualified personnel of their own who were sufficiently well grounded in good theoretical training and, therefore, there was a need for an independent development plant. Furthermore, mass-production plants in the socialistic economy were required to fulfill production plans and they did not want to lose valuable time and money in conducting research and development. Therefore, the administration found it necessary to establish a special development plant. However, most of the activities of MEZ Development consisted of work on various specific deliveries rather than in pure research and development. Most often MEZ Development took part in the manufacture of the prototype, leaving the production of the series to be performed by one of the other MEZ enterprises. The extent of MEZ Development's activities in the manufacture of a prototype varied from case to case; the specifications were computed by the MEZ mass-production plants and the design made by MEZ Development, or vice versa. Sometimes the prototype was entirely computed and manufactured by MEZ Development; and yet, in other cases, the prototype was manufactured by the MEZ mass-production plant concerned and only the testing was performed by Development, or vice versa. There were also cases when MEZ Development fulfilled the entire order and delivered the machinery directly to the customers.

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2. As a plant for research and development in the field of strong-current electricity, MEZ Development was financed by the Ministry of Machinery Construction, Main Administration I. However, starting with 1953, the position of MEZ Development became rather difficult because the Ministry did not allocate money enough for the plant, apparently trying to make a saving and expecting MEZ Development to support itself. For instance, in 1954 the Ministry canceled funds for MEZ Development's work in the field of magnetic amplifiers, which had formerly been authorized. This policy resulted in the fact that MEZ Development raised its prices, which prices were already very high. For example, the price for an amplidyne manufactured by MEZ in Vsetin (N 49-20, E 18-00) was about 15,000 crowns, but MEZ Development charged about 60,000 crowns for the manufacture of the prototype alone. Source believes, however, that the Ministry would change its financial policy toward MEZ Development if more emphasis were again put on heavy industry.

Development in Individual MEZ Plants

3. In addition to the research and development activities as centralized in MEZ Development, each MEZ plant was engaged in development activity pertaining to its particular line of production. The design of a new type of machine based on the design of an old machine which was of the same type but perhaps smaller than the new one was considered as a development activity in this instance. Such development activity was performed only in connection with a definite order. There was a fund in each enterprise to finance such development. However, it was not clear to source how the development fund was established -- whether it was a fixed sum or certain percentage of the turnover, or a certain percentage of the profit. It was up to the Development Department of Main Administration I to authorize that a plant use money from the development funds. To that purpose the plants annually compiled a list of activities which they intended the fund to pay for and submitted this list to the Development Department for approval. The Department compared and studied the lists submitted by all the plants under the jurisdiction of Main Administration I and then decided whether or not to authorize the individual development activities. In this manner, an attempt was made to eliminate duplication of effort on the part of the individual plants. In the event of disapproval, the plant concerned was advised to contact another plant where a similar problem was satisfactorily solved or was already under study. Actually, the individual plants developed the practice of trying to combine each order with some proposed development activity, and after the activity had been approved they used the fund, not only for the development activity, but also to pay for rejects.

Shortage of Technicians

4. MEZ Development had a shortage of technicians with high professional educations. This was the case, more or less, with every Czechoslovak plant which produced strong-current electric machinery. Even the two most important factories, i.e., the CKD Stalingrad in Prague and the ET plant of the V.I. Lenin Works in Pilsen, which had been more than sufficiently staffed during the First Republic, were still anxious to hire personnel with high professional qualifications. MEZ Vsetin, the third most important factory in this field, could not get a graduate engineer in electricity for such an important position as chief of the testing plant. As early as 1952, at a meeting held in the Vsetin factory, the Minister of Heavy Machinery said that the factory should select capable employees and give them the necessary theoretical training rather than expect to hire recently graduated engineers from technical institutes. The Minister said he was unable

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to recruit the graduate engineers. Ing. Miroslav Smok, an executive of the Main Administration branch, also said, in 1952, on the occasion of a similar meeting held in Vsetin: "Do not count on hiring technical personnel. Rather, try to train some of your own people and do not count at all on hiring recently graduated engineers. They are needed elsewhere." It was the general opinion among the audience that the new graduates were needed in military fields. However, source did not believe that there was a large secret military installation which would absorb a substantial part of the graduates; rather, he believed that the new technical personnel were employed in the bulky administrative and semi-administrative setup of the régime.

Organization

5. MEZ Development was originally located in Olomouc. In 1947 or 1948 the plant was moved to its present address, Svitavska ulice No. 5 in Brno, the premises of which had been the former Klima firm. Klima produced small electric apparatus such as drills. MEZ Development has been slowly but continuously expanding. In late summer 1954, the plant had about 200 technicians and administrative employees and about 50 workers. The first manager of the plant was Dr. Ing. Vilem Klima (no connection with the Klima firm mentioned above) who was replaced at about the end of 1950 by the present manager, Ing. Vaclav Mares. Mares was originally a specifications engineer and later manager of the MEZ plant in Vsetin.¹ Mares did not, in any way, achieve the reputation of accomplishment which Klima enjoyed. Ing. Londin (fnu) was Chief Engineer. The MEZ Development technicians were in a higher salary bracket than were the technicians with similar education and experience who were employed in the MEZ plants for mass production. However, the difference was rather slight and was not enough to make the plant technicians try to get a position with MEZ Development.

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1. Workshop

The workshop was located in a new building adjacent to the old premises. It was built by MEZ Development. A part of the workshop was occupied by the testing plant which was well equipped. Source recalled that the equipment in the workshop included a nine-loop oscillator. About 15 technicians were employed in the testing plant. Stanicek (fnu) was the chief.

Principal Activities

In general, MEZ Development did not follow any systematic production program but dealt with particular problems as they arose. Therefore, its activities were somewhat confused. Presented in this report are the principal activities of MEZ Development as they were known to source.

Three-Phase AC Commutator Motors

This was the favorite field of interest of former manager Klima. MEZ Development participated in definite deliveries made by other MEZ plants and did some purely scientific work as well. Among other items, MEZ Development designed three-phase commutator motors with an output of from 600 to 1,000 kw. Source did not know whether or not these motors were actually manufactured. It was planned to use two units of these series in the testing plant of MEZ in Vsetin. An important delivery in this field were the dynamometers for the USSR calculated and designed by MEZ Development and produced by MEZ Vsetin.²

Induction Motors

During 1951 MEZ Development produced three induction motors, one operating at 40,000 rpm, another at 60,000 rpm, and another at

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100,000 rpm. They were used in equipment for drilling very fine holes and were delivered to factories in Czechoslovakia whose names source could not recall. In 1950, work started on the standardization of specifications for the production of medium and large-size induction motors, with either wound-rotor or squirrel-cage construction. MEZ Development was charged with the responsibility of accomplishing this standardization. It was planned to design a so-called "national motor" which was to be produced by all Czechoslovak enterprises in this production line, i.e., CKD Stalingrad, ET plant, MEZ Vsetin, and MEZ Frenstat pod Radhostem (N 49-33, E 18-13). Of all these enterprises, the most important production took place in the ET plant. This factory designed, in the course of time, several standard lines of induction motors with the most modern line dating after 1945. Therefore, it appeared rather strange that the ET factory was not given the responsibility for standardization instead of MEZ Development. ET's personnel were far more experienced than were the MEZ Development personnel. Actually, the reason for it was the fact that Klima, the manager of MEZ Development, was the first to have brought up the problem, in addition to which he was an outstanding CP member, while Ing. Horak (fnu), the leading technician for induction motors at the ET plant, who had been working in this line since 1930, was not even a CP member on paper. The sizes of the induction motors produced by the ET plant complied with the usual practice which was that the outer diameter of the stator lamination followed a certain line of numbers which had been set up as standard. MEZ Development discontinued this normal Czechoslovak procedure and adopted the Soviet method which was based on a so-called "cutting plan". In the Soviet method, the diameters of the stator lamination were punched in sizes which allowed the highest possible number of laminations to be punched from dynamo sheets which, in turn, came in standard sizes. All Czechoslovak dynamo and transformer sheets were produced by the iron works in Kraluv Dvur (N 49-56, E 14-03) and in Liskovec near Frydek (N 49-41, E 18-21). The sheets were no wider than one meter. Source knew that MEZ Development adopted the Soviet method and he believed that they also adopted the actual Soviet sizes for induction motors. MEZ Development designed a line of motors with the diameters ranging from 25 to 60 cm. In designing the machinery, MEZ Development attempted to decrease to a minimum the quantity of copper to be used in the machines. They accomplished this by shifting the bulk of the weight of the machine from copper to iron parts. This policy was followed regardless of the fact that this method made the end product very heavy. In late summer 1954, MEZ Development was about to finish the first complete prototype of the "national motor"; the size of the outer diameter of the stator lamination was about 40 cm. Actually, three different motors of this type were manufactured. One motor was open, the second was enclosed with surface cooling, and the third was entirely enclosed. The testing proved satisfactory and only minor adjustments were still to be made at that time.

Synchronous Generators

10. Among other items, MEZ Development produced two high-frequency synchronous generators. Source could furnish no details concerning the date of this project, the success achieved, etc.

Generators for the Armed Forces

11. In about 1950, MEZ Development produced generators for the use of the Armed Forces. Most of the generators were DC. The generators were driven by a gasoline motor, but source did not know the origin of the motor. MEZ Development also assembled the whole unit. The military designations of the assembled units were ZG 51 and ZG 52. The 51 type used an M 1104 generator; 11 represented the outer

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diameter of the armature in centimeters, the four represented the length of the armature in centimeters. The generator developed one kilowatt at 50 v and 3,000 rpm. The 52 type used an M 904 generator and developed 0.5 kw. at 50 v and 3,000 rpm. Both types of units were portable. About 60 units were produced; however, source did not know whether all of these units were produced by MEZ Development or whether some of them were produced by another MEZ plant. After production of these series had been completed, MEZ Development produced generators with a higher output, but not exceeding 20 kw., which were also for military purposes. MEZ Development still worked in this line as of late summer 1954. However, source did not know whether MEZ Development produced only the prototypes or the entire series as well.

Amplidynes

12. The production of amplidynes in Czechoslovakia started in 1949 when MEZ Vsetin manufactured one unit for experimental purposes. This was the AK 16 type. The first amplidynes produced in series were the MA 1107, developing 0.6 kw. at 3,000 rpm and 220 v; MA 1610, developing 2.5 kw. at 3,000 rpm and 220 v; MA 1605, developing 1.2 kw. at 3,000 rpm and 220 v. In these three types the poles were fastened to the stator by means of screws. As of late summer 1954, a total of approximately 200 units of MA 1107 and about 20 units of MA 1610 and MA 1605 had been produced. A few units of these types were produced as rototrols. Production of the following amplidynes began in 1952: MA 806-2k, MA 1007-2k, MA 1208-2k, MA 1610-2k, and MA 2510-2k. In all of these types the stator and the poles were punched as one unit, similar to the method used in amplidynes produced by General Electric. Two units of the MA 2010-2k type were produced in 1953; one was for an H 3150 planing machine, the other was kept in reserve.³ As of late summer 1954, the manufacture of prototypes of the MA 806-2k and MA 1208-2k types was almost completed while the MA 1107-2k, MA 1610-2k, and the MA 2510-2k types were completed in design only. The MA 2510 was to be installed in the electric drive for the strip mill in Kuncice (N 49-48, E 18-18).⁴ All the amplidynes mentioned in this paragraph were and continued to be computed and designed by MEZ Vsetin and produced by MEZ Development. In 1952 this practice was modified to the extent that MEZ Development produced the prototype only, while the production of the series was performed at MEZ Brno-Zidenice. This practice was changed again about the end of 1953 with the production in series transferred to MEZ Vsetin. One exception to this rule was the amplidyne MA 1208-2x2, which was entirely designed and produced by MEZ Development. This amplidyne, which operated at a low number of revolutions per minute, had been originally intended for the rudder drive of the "BOBRUYSK" tugboat.⁵ However, at the beginning of 1954 the amplidyne was delivered, without having been properly tested, to Krizik, Development Plant, National Enterprise, in Prague-Karlín to be used in equipment for maintaining constant frequency.
13. Two military men came to MEZ Development in 1952; they were Major Pokorný and Ing. Severin, both in civilian clothes. They were from Prague, probably from the VTU (Military Technical Institute). They asked MEZ Development to deliver an amplidyne to be used as a sample for military purposes. They offered and later actually supplied MEZ Development with two or three amplidynes to be used by Development as samples for the type of amplidyne which the armed forces wished to receive. The amplidynes were General Electric products; all were of the same type, i.e., the armature was five inches in diameter and the outer diameter of the stator lamination measured eight inches. They were used in the control equipment for the purpose of sighting heavy guns. Source did not know the outcome of this project; however, he

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believed that an MA 16 amplidyne was actually delivered by MEZ Development to the armed forces.

Low Voltage Generators

14. MEZ Development completely designed and manufactured several DC low-voltage generators, one of which was rated for 12 v and 5,000 amp. and was completed in spring 1954.

Electromechanical Transmissions

15. MEZ Development worked on an electromechanical transmission called "Delka" for trains powered by diesel engines. The trains were to consist of three cars. The project, which had begun in 1947, was canceled in 1953. The cancellation probably coincided with the procurement of two or three train units which Czechoslovakia ordered from the Ganz firm in Budapest. The units started to operate in Czechoslovakia in 1954. They were equipped with standard mechanical transmissions.

Electric Drives

16. MEZ Development also participated in some of the deliveries of electric drives made by MEZ Vsetin. While the Vsetin factory computed the specifications, designed, and manufactured the machines, MEZ Development drew up detailed schematics for assembly and installation of the drive and procured the accessory equipment. In a few cases, MEZ Development also produced some of the accessory equipment. The panels were always procured from MEZ in Postrelmov (N 49-55, E 16-55). By doing this, MEZ Development performed activities which were usually performed and, according to the setup of the Main Administration, should have been performed by EZ (Works for Assembly and Installation of Electric Equipment). Such exceptions were made for cases which were more difficult than usual. In one case, a complete electric drive to be installed in an ingot-planing machine at V.M. Molotov Iron Works in Trinec (N 49-41, E 18-39) was produced by MEZ Development. The production started in 1952 and was still under way in late summer 1954. Source knew no details concerning this project.

Activities of the Laboratory Department

17. The following were some of the activities of the Laboratory Department:
- An electronic control device, probably for voltage regulation, marked SM 30, was manufactured in 1950 and was actually used in several instances. Source knew no details.
 - A special device, source believes it was called "Argonal", for welding aluminum was manufactured in 1952.
 - A testing device operating at high frequency to be used for detecting short circuits in the windings of armatures, etc., was manufactured in 1953.
 - In 1953, the Laboratory Department began work on a device for tracing frequency characteristics. The device would enable one to trace, in an experimental way, the Niquist characteristics of an electric drive. MEZ Development promised to complete the device in the fall of 1954. However, as late as the summer of 1954, after as much as 80,000 crowns (post-currency-reform) had been expended, the device was still far from being completed.

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*Krizik Development Plant in Prague-Karlin manufactured a device for similar purposes; however, it did not operate very satisfactorily and could not be used for machinery with a high output such as was produced by MEZ Vsetin. Nevertheless, the Krizik device was far less expensive than the one MEZ Development was working on and was completed by the time MEZ Development began the manufacture of its device.

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